



COPY

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)
)
Thor Borgford)
)
Serial No.: **09/147,208**)
)
Filed: **March 2, 1999**)
)
For: **Antiviral Ricin-Like Proteins**)

Group No.: 1648

Examiner: J. Stucker

The Assistance Commissioner of Patents
& Trademarks
Washington, D.C. 20231
U.S.A.

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Dear Sir:

DECLARATION UNDER 37 CFR §1.132

I, John Michael Lord, a citizen of The United Kingdom, and resident of Leamington Spa, Warks, declare that the following facts are within my knowledge and are true.

1. I reside at 17 St. Andrew's Road, Leamington Spa, Warwickshire CV32 7EU, United Kingdom.
2. I am currently Professor of Molecular Cell Biology, University of Warwick, Coventry CV4 7AL, United Kingdom.
3. I have been conducting research in the field of toxic proteins since 1981. I have authored over 90 publications which have been published in referred journals including the *Journal of Biological Chemistry*. My curriculum vitae is attached to this Declaration as Exhibit A.

4. I have read and understood the disclosure and claims of U.S. Patent Application No. 09/147,208 filed March 2, 1999 (hereafter "the Application"). The Application relates to a modified ricin-like toxin containing the A and B chains of a ricin-like toxin linked by a linker sequence that is cleavable by a retroviral protease.

5. I have read and understood the office action that issued on the Application on April 9, 2001. The Examiner is of the view that the invention is obvious in view of Leppla et al. (*Bact. Prot. Toxins, Zbl. Bakt.*), in view of Westby et al. (*Bioconj. Chem.*). I have read and understood Leppla et al. and Westby et al. (collectively "the cited references"). I am a co-author on the Westby et al. reference. I disagree with the Examiner that the modified ricin toxin described in the claims of the Application is obvious in view of the cited references.

6. The claims in the Application recite a recombinant protein comprising an A chain of a ricin-like toxin and a B chain of a ricin-like toxin joined by a linker sequence that contains a cleavage recognition site for a retroviral protease. It is not obvious from the prior art that the inclusion of a retroviral protease-cleavable linker in a ricin toxin would be accessible to the appropriate protease. Westby et al. discloses a modified ricin containing a factor Xa or thrombin cleavage site. The changes made by Westby et al. to the native proricin linker sequence were deliberately chosen to require the minimal alterations to this sequence. In contrast, the changes in the native ricin sequence in the Application are much more extensive and because of this it is not predictable that they would be substrates for the appropriate protease, and there is no guarantee that the chimeric protein could be reactivated. The unpredictability of the technology is illustrated by our findings that a sequence derived from diphtheria toxin and containing a trypsin-sensitive cleavage site could be cleaved by the enzyme when inserted between Staphylococcal protein A and ricin A chain (O'Hare et al., (1990) *FEBS Letters* 273, 200-204) but was not cleaved when inserted between interleukin-2 and ricin A chain (unpublished data cited in Westby et al. (1992).

Therefore, one of skill in the art can not predict whether the insertion of a particular linker sequence in a recombinant ricin protein would in fact be cleaved.

7. Leppla et al. discloses a modified anthrax toxin. I believe that one skilled in the art can not predict that a linker sequence that works in an anthrax system would work in ricin. There is no guarantee that what might be the case for one toxic protein would necessarily apply to another.

8. In summary, I am of the opinion that the claims of the Application are not obvious in view of the cited references.

9. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statement and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the Application or patent resulting therefrom.

9 July 2001
Date

John Michael Lord
John Michael Lord

EXHIBIT A

CURRICULUM VITAE

J. M. LORD

Name: John Michael Lord
Date of Birth: 9th August, 1945
Nationality: British
Address: Department of Biological Sciences
University of Warwick
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UNIVERSITY EDUCATION:

1963-1967 University of Salford
B.Sc., III Chemistry & Biochemistry

1967-1970 University of Bradford
Ph.D. (1970).
Thesis Title: "Glycollate metabolism in algae"
Supervisor: Professor M. J. Merrett

1970-1972 University of California
Postdoctoral Fellow
Project: Organelle biogenesis in castor bean
endosperm
Supervisor: Professor Harry Beevers

1972-1973 University of Leicester
SERC Postdoctoral Fellow
Project: Enzyme and organelle formation in
Tetrahymena pyriformis
Supervisor: Professor Sir Hans L. Kornberg FRS

Professional Positions:

1973-1982 Lecturer, School of Biological Sciences,
University of Bradford.

1982-1988 Reader, Department of Biological Sciences,
University of Warwick.

1988-present Professor, Department of Biological Sciences,
University of Warwick.

Academic-Related Activities

(a) Research Funding Committees

- | | |
|------------------------|--|
| 1983-1986 | Member of the Plant Sciences and Microbiology subcommittee of the Biological Sciences Committee, SERC. |
| 1984-1985
1985-1986 | Member SERC Postdoctoral Fellowship and NATO Fellowship Committee. |
| 1986-1987
1987-1988 | Member Research Corporation Trust Grant Committee. |
| 1992 | Member Plant Molecular Biology: Phase II Board, AFRC |

(b) Research programme review

I have been a member of the review panel for the Ricin Research Program, US Army Medical Biological Defence Research Program.

(c) Editorial Boards

Editorial board member/adviser for:-

Oxford Surveys of Plant Molecular and Cell Biology (1984-1990).

Advanced Drug Delivery Reviews (1987-1993).

Biochemical Journal (from 1988).

(d) Reviewing

Regular grant reviewer for:-

BBSRC
National Sciences Foundation (USA).
The Wellcome Trust
The Leverhulme Trust

Regular referee for papers submitted to a wide range of life science journals.

(e) Ph.D. Viva's

Regular external examiner for Ph.D. degree. Over the past three years I have been external examiner six times - three times at Cambridge (twice in Biochemistry Department, once in Botany Department) and at Oxford, Durham and Cardiff. In addition I have a normal share of internal examiners duties for Ph.D. candidates in the Department of Biological Sciences at Warwick.

(f) External Examiners - Degree Courses

External examiner for the Biomedical Sciences Degree course at Sheffield Polytechnic for 1988-1992.

External examiner for Biomedical Chemistry Degree course at Sheffield Hallam University for 1993-1998.

External examiner Biochemistry and Molecular Biology, University of Leeds (from 2001)

External examiner Cell Biology and Molecular Genetics, National University of Ireland, Dublin (from 2001)

(g) Communication of Research Interests to the General Public

I have given interviews describing my research interests to news and science documentary programmes on both radio and TV, and also to several local and national newspapers and to local Cancer Research Campaign groups.

(h) Conference Organization

I was co-organizer (with Professor D. Grierson, Nottingham University) of the 29th Harden Conference entitled "Regulation of Plant Gene Expression", Wye College, September 13-18, 1987. Organizer, the Host Colloquium for the Biochemical Society meeting 22-24 July, 1992, University of Warwick.

(i) Departmental Position

At present I am head of the Molecular Cell Biology Research Group (formerly the Plant Biochemistry Research Group) within the Department of Biological Sciences. The current group has 57 members including 8 academic staff and 2 Senior Research Fellows.

(j) Award

I was awarded the Pierce Immunotoxin Prize at the Fourth International Symposium on Immunotoxins, Myrtle Beach, South Carolina, June 1995, in recognition for having made major contributions to the field of immunotoxin research.

(k) Consultancies

1987-1991 Zeneca Pharmaceuticals plc, Alderley Park, UK

1987-1990 Italfarmaco SpA, Milan, Italy

1990-1993 Biogen Inc., Cambridge, USA

Invited Talks Presented at Conferences (since 1986)

- Mar 1986 -Rank Prize Funds Symposium on Lectins, Malvern
- Mar 1986 -U.C.L.A. Symposium on Membrane Mediated Cytotoxicity,
Park City, Utah, USA.
- Aug 1986 -Gordon Conference on Cancer, Colby-Sawyer College,
New Hampshire, USA
- Sept 1986 -British Association for the Advancement of Science, Bristol
- Oct 1986 - Oji International Seminar on Plant Molecular Biology,
Kashiko-jima, Japan
- Jan 1987 - Society for Experimental Biology Symposium on Protein Engineering.
Manchester
- Mar 1987 -Keynote Speaker, Society for Experimental Biology Symposium on Plant Molecular Biology, York
- Sept 1987 -Society for Experimental Biology Symposium on Biogenesis of Organelles, Dublin
- Oct 1987 -International Workshop on Protein Toxins in Cancer Therapy, Padua, Italy
- May 1988 -Norsk Hydro Seminar on Protein Toxins, Oslo, Norway
- June 1988 -First International Symposium on Immunotoxins, Durham, North Carolina, USA
- April 1989- Society for Experimental Biology Symposium on Compartmentation in Non Photosynthetic
PlantTissues, Edinburgh
- Feb 1990 -U.C.L.A. Symposium on Genetic and *In vitro* Analysis of cell Compartmentation, Taos,
New Mexico, USA
- June 1990 -Second International Symposium on Immunotoxins, Orlando, Florida, USA
- July 1990 -Gordon Conference on Drug Carriers, Tilson School,
New Hampshire, USA
- Jan 1991 - 14th Annual Plant Physiology Symposium, University of California, Riverside, USA
- Mar 1991 -Applied Biosystems Conference on Molecular Aspects of Glycoprotein Research, London
- April 1991- Society for Experimental Biology meeting, Birmingham
- May 1991 -Oxford Cell Biology Club Meeting on Plant Molecular Biology, Oxford
- June 1992 -Third International Symposium on Immunotoxins, Orlando, Florida, USA
- Sept 1992 - AFRC Plant Molecular Biology meeting, Oxford
- Oct 1992 - Invited speaker, Biogen Inc. meeting on Eukaryotic Cell Biology, Geneva, Switzerland
- April 1994 - Invited speaker, EMBO/FEBS Course on "Protein sorting and maturation in the endoplasmic
reticulum", Heidelberg, Germany

- May 1995 - Invited speaker, SFPV meeting on "Targeting and glycosylation of plant secretory proteins", Rouen, France
- May 1995 - Participant, Cold Spring Harbor meeting on "Protein kinesis: the dynamics of protein trafficking and stability", Cold Spring Harbor, New York, USA
- June 1995 - Invited speaker, Fourth International Symposium on Immunotoxins, Myrtle Beach, South Carolina, USA
- Aug 1995 - Invited speaker, Danish Cancer Society, Third Annual Symposium, Copenhagen, Denmark
- Aug 1998 - Invited speaker, meeting on "Protein maturation in the endoplasmic reticulum", Belgirate, Italy
- Jan 1999 - Invited speaker, Joint UK-Japan Symposium on "Cell signalling", Nagoya, Japan
- Mar 1999 - Presented the Woolhouse Memorial Lecture, Society for Experimental Biology meeting, Edinburgh
- Apr 2000 - Invited speaker, Calreticulin2000, Oxford
- June 2000 - Invited speaker, meeting on "Cells as Protein Factories", Paris, France
- Sept 2000 - Plenary Lecturer, Italian Biochemocal Society Annual Meeting, Naples, Italy
- Oct 2000 - Invited speaker, INSERM meeting "Bacterial protein toxins", Paris, France

Invited academic seminars etc.

Since 1991 I have presented invited accounts of my research at the following institutions:

- 1991 - at Applied Biosystems Ltd; Oxford University; the Free University of Berlin; the European Molecular Biology Laboratory, Heidelberg; the Max Planck Research Institute, Cologne; Long Ashton Research Station; Southwestern Medical Center, University of Texas at Dallas.
- 1992 - at the Clinical Research Centre, Harrow; Agricultural Genetics Company, Cambridge; Biogen Inc., Boston; Italfarmaco SpA, Milan.
- 1993 - at Birkbeck College; University of Kent; University of Leicester; Royal Holloway College; University of Texas at Austin; National Cancer Institute, NIH, Bethesda.
- 1994 - at the University of Heidelberg; San Raffaele Research Institute, Milan; Hollings Cancer Center, Medical University of South Carolina; Max Delbrück Center for Molecular Biology, Berlin.
- 1995 - at St Andrew's University; the Institute for Cancer Research, Oslo; University of Nottingham.
- 1996 - at Sussex University; Texas A & M University; University of Texas at Austin; Oxford University.
- 1997 - at Istituto Biosintesi Vegetali, Milan; Centre for Applied Microbiology and Research, Porton Down; University of Nevada, Reno.
- 1998 - at Leeds University; University of Verona; Texas A & M University; University of Texas at Austin.

- 1999 - at Sheffield Hallam University; European Molecular Biology Laboratory, Heidelberg; Organisation for the Prohibition of Chemical Weapons, The Hague; DERA, Porton Down; Institute for Arable Crops Research, Long Ashton
- 2000 at Bristol University; Heidelberg University, University of Leicester

Publications J. M. Lord

1. Refereed Journal Papers

- (1) Lord, J. M. and Merrett, M. J. (1968). Glycollate oxidase in *Chlorella pyrenoidosa*. *Biochim. Biophys. Acta* **159**, 543-544.
- (2) Codd, G. A., Lord, J. M. and Merrett, M. J. (1969). The glycollate oxidising enzyme of algae. *FEBS Lett.* **5**, 341-342.
- (3) Goulding, K. H., Lord, J. M. and Merrett, M. J. (1969). Glycollate formation during the photorespiration of acetate by *Chlorella*. *J. Exp. Bot.* **20**, 34-45.
- (4) Lord, J. M. and Merrett, M. J. (1969). The effect of hydroxy-methanesulphonate on photosynthesis in *Chlorella pyrenoidosa*. *J. Exp. Bot.* **20**, 743-750.
- (5) Lord, J. M. and Merrett, M. J. (1970). The pathway of glycollate utilization in *Chlorella pyrenoidosa*. *Biochem. J.* **117**, 929-937.
- (6) Lord, J. M. and Merrett, M. J. (1970). The regulation of glycollate oxidoreductase with photosynthetic capacity in *Chlamydomonas reinhardtii*. *Biochem. J.* **119**, 125-127.
- (7) Lord, J. M., Codd, G. A. and Merrett, M. J. (1970). The effect of light quality on glycollate formation and excretion in algae. *Plant Physiol.* **46**, 855-856.
- (8) Lord, J. M. and Merrett, M. J. (1971). The growth of *Chlorella pyrenoidosa* on glycollate. *J. Exp. Bot.* **22**, 60-69.
- (9) Lord, J. M. and Merrett, M. J. (1971). The intracellular localization of glycollate oxidoreductase in *Euglena gracilis*. *Biochem. J.* **124**, 275-281.
- (10) Lord, J. M. and Merrett, M. J. (1973). The conversion of glycerate into pyruvate by *Chlorella* extracts. *New Phytol.* **72**, 249-252.
- (11) Merrett, M. J. and Lord, J. M. (1973). Glycollate formation and metabolism by algae. *New Phytol.* **72**, 751-767.
- (12) Lord, J. M. and Beevers, H. (1972). The problem of reduced nicotinamide adenine dinucleotide oxidation in glyoxysomes. *Plant Physiol.* **49**, 249-251.
- (13) Lord, J. M. (1972). Glycollate oxidoreductase in *Escherichia coli*. *Biochim. Biophys. Acta* **267**, 227-237.
- (14) Lord, J. M., Kagawa, T. and Beevers, H. (1972). Intracellular distribution of enzymes of the cytidine diphosphate choline pathway in castor bean endosperm. *Proc. Nat. Acad. Sci. USA* **69**, 2429-2432.

- (15) Kagawa, T., Lord, J. M. and Beevers, H. (1973). The origin and turnover of organelle membranes in castor bean endosperm. *Plant Physiol.* **51**, 61-65.
- (16) Moore, T. S., Lord, J. M., Kagawa, T. and Beevers, H. (1973). Enzymes of phospholipid metabolism in the endoplasmic reticulum of castor bean endosperm. *Plant Physiol.* **52**, 50-53.
- (17) Lord, J. M., Kagawa, T., Moore, T. S. and Beevers, H. (1973). Endoplasmic reticulum as the site of lecithin formation in castor bean endosperm. *J. Cell. Biol.* **57**, 659-667.
- (18) Kagawa, T., Lord, J. M. and Beevers, H. (1975). Lecithin synthesis during microbody biogenesis in watermelon cotyledons. *Arch. Biochem. Biophys.* **167**, 45-53.
- (19) Lord, J. M., McFadden, B. A. and Kornberg, H. L. (1974). Changes in microbody enzymes during growth of *Tetrahymena pyriformis*. *Proc. Roy. Soc.* **185**, 19-31.
- (20) Brown, R. H., Lord, J. M. and Merrett, M. J. (1974). Fractionation of the proteins of plant microbodies. *Biochem. J.* **144**, 559-566.
- (21) Bowden, L. and Lord, J. M. (1975). Development of phospholipid synthesizing enzymes in castor bean endosperm. *FEBS Lett.* **49**, 369-371.
- (22) Lord, J. M. and Brown, R. H. (1975). Purification and some properties of *Chlorella fusca* ribulose diphosphate carboxylase. *Plant Physiol.* **55**, 360-364.
- (23) Lord, J. M. and Merrett, M. J. (1975). Ribulose diphosphate carboxylase synthesis in *Euglena* 1. Increased activity after transferring regreening cells to darkness. *Plant Physiol.* **55**, 890-892.
- (24) Lord, J. M., McFadden, B. A., Rowe, A. and Dilks, S. (1975). Composition, quaternary structure and catalytic properties of ribulose diphosphate carboxylase from *Euglena gracilis*. *Eur. J. Biochem.* **54**, 195-206.
- (25) Lord, J. M. (1975). Phosphatidylcholine and phosphatidylethanolamine are synthesized by a single enzyme in castor bean endosperm. *Biochem. J.* **151**, 451-453.
- (26) Lord, J. M., Codd, G. A. and Stewart, W. D. P. (1975). Serological comparison of ribulose diphosphate carboxylase from *Euglena*, *Chlorella* and several blue-green algae. *Plant Sci. Lett.* **4**, 377-383.
- (27) Lord, J. M., Armitage, T. L. and Merrett, M. J. (1975). Ribulose diphosphate carboxylase synthesis in *Euglena*. 2. Effect of inhibitors on enzyme synthesis during regreening and subsequent transfer to darkness. *Plant Physiol.* **56**, 600-604.
- (28) Lord, J. M. (1976). Phospholipid synthesis and exchange in castor bean endosperm. *Plant Physiol.* **57**, 218-223.
- (29) Bowden, L. and Lord, J. M. (1976). Similarities in the polypeptide composition of glyoxysomal and endoplasmic reticulum membranes from castor bean endosperm. *Biochem. J.* **154**, 491-499.
- (30) Bowden, L. and Lord, J. M. (1976). Cellular origin of glyoxysomal proteins in germinating castor bean endosperm. *Biochem. J.* **154**, 501-506.
- (31) Brown, R. H., Bowden, L. and Lord, J. M. (1976). Isoelectric focussing of endoplasmic reticulum and glyoxysomal membrane polypeptides of castor bean endosperm. *Planta* **130**, 95-96.
- (32) Wrigley, A. and Lord, J. M. (1977). Effects of gibberellic acid on organelle biogenesis in the endosperm of germinating castor bean endosperm. *J. Exp. Bot.* **28**, 345-353.
- (33) Bowden, L. and Lord, J. M. (1977). Serological relationships between endoplasmic reticulum and

- (34) Dockerty, A., Lord, J. M. and Merrett, M. J. (1977). Development of ribulose diphosphate carboxylase in castor bean cotyledons. *Plant Physiol.* **59**, 1125-1127.
- (35) Lord, J. M. (1978). Evidence that a proliferation of the endoplasmic reticulum precedes glyoxysomes formation in castor bean endosperm. *J. Exp. Bot.* **29**, 13-23
- (36) Mellor, R. B., Bowden, L. and Lord, J. M. (1978). Glycoproteins of the glyoxysomal matrix. *FEBS Lett* **90**, 275-281.
- (37) Bowden, L. and Lord, J. M. (1978). Purification and comparative properties of microsomal and glyoxysomal malate synthase from castor bean endosperm. *Plant Physiol.* **61**, 259-265.
- (38) Lord, J. M. and Bowden, L. (1978). Evidence that glyoxysomal malate synthase is segregated by the endoplasmic reticulum. *Plant Physiol.* **61**, 266-270.
- (39) Mellor, R. B. and Lord, J. M. (1978). Incorporation of D[¹⁴C] galactose into organelle glycoprotein in castor bean endosperm. *Planta* **141**, 329-332.
- (40) Mellor, R. B. and Lord, J. M. (1979). Formation of lipid-linked mono- and oligosaccharides from GDP-mannose by castor bean endosperm homogenates. *Planta* **146**, 91-99.
- (41) Bowden-Bonnett, L. and Lord, J. M. (1979). Isolation and cell-free translation of total messenger RNA from germinating castor bean endosperm. *Plant Physiol.* **63**, 769-773.
- (42) Mellor, R. B. and Lord, J. M. (1979). Subcellular localization of mannosyl-transferase and glycoprotein biosynthesis in castor bean endosperm. *Planta* **146**, 147-153.
- (43) Roberts, L. M. and Lord, J. M. (1979). Ribonucleic acid synthesis in germinating castor bean endosperm. *J. Exp. Bot.* **30**, 739-749.
- (44) Mellor, R. B., Roberts, L. M. and Lord, M. J. (1979). Glycosylation of exogenous protein by endoplasmic reticulum membranes from castor bean (*Ricinus communis*) endosperm. *Biochem. J.* **182**, 629-631.
- (45) Mellor, R. B. and Lord, J. M. (1979). Involvement of a lipid linked intermediate in the transfer of galactose from UDP [¹⁴C] galactose to exogenous protein in castor bean endosperm homogenates. *Planta* **147**, 89-96.
- (46) Roberts, L. M. and Lord, J. M. (1979). Developmental changes in the activity of messenger RNA isolated from germinating castor bean endosperm. *Plant Physiol.* **64**, 630-634.
- (47) Roberts, L. M. Mellor, R. B. and Lord, J. M. (1980). Glycoprotein fucosyltransferase in the endoplasmic reticulum of castor bean endosperm cells. *FEBS Lett.* **113**, 90-94.
- (48) Mellor, R. B., Krusius, T. and Lord, J. M. (1980). Analysis of glycoconjugate saccharides in organelles isolated from castor bean endosperm. *Plant Physiol.* **65**, 1073-1075.
- (49) Mellor, R. B., Roberts, L. M. and Lord, J. M. (1980). N-acetylglucosamine transfer reactions and glycoprotein biosynthesis in castor bean endosperm. *J. Exp. Bot.* **31**, 993-1003.
- (50) Roberts, L. M. and Lord, J. M. (1981). Protein biosynthetic capacity in the endosperm tissue of ripening castor bean seeds *Planta* **152**, 420-427.
- (51) Roberts, L. M. and Lord, J. M. (1981). The synthesis of *Ricinus communis* agglutinin. Contranlational and posttranslational modification of agglutinin polypeptides. *Eur. J. Biochem.* **119**, 31-41.
- (52) Roberts, L. M. and Lord, J. M. (1981). Synthesis and posttranslational segregation of glyoxysomal

- (53) Harson, M. M., Conder, M. J. and Lord, J. M. (1983). Endoplasmic reticulum and glyoxysomal membranes from castor bean endosperm: interaction between membrane glycoprotein and organelle matrix proteins. *Planta* **157**, 143-149.
- (54) Conder, M. J. and Lord, J. M. (1983). Heterogeneous distribution of glycosyltransferases in the endoplasmic reticulum of castor bean endosperm. *Plant Physiol.* **72**, 547-552.
- (55) Butterworth, A. G. and Lord, J. M. (1983). Ricin and *Ricinus communis* agglutinin subunits are all derived from a single sized polypeptide precursor. *Eur. J. Biochem.* **137**, 57-65.
- (56) Lord, J. M., Lamb, F. I. and Roberts, L. M. (1984). Ricin: structure, biological activity and synthesis. *Oxford Surveys Plant Mol. and Cell Biol.* **1**, 85-101.
- (57) Roberts, L. M. and Lord, J. M. (1984). Plant toxins in drug targeting. *Plant Mol. Biol.* **2**, 1-8.
- (58) Lord, J. M. (1985). Synthesis and intracellular transport of lectin and storage protein precursors in castor bean endosperm. *Eur. J. Biochem.* **146**, 403-409.
- (59) Lord, J. M. (1985). Precursors of ricin and *Ricinus communis* agglutinin. Glycosylation and processing. *Eur. J. Biochem.* **146**, 411-416.
- (60) Lamb, F. I., Roberts, L. M. and Lord, J. M. (1985). Nucleotide sequences of cloned cDNA coding for preproricin. *Eur. J. Biochem.* **148**, 265-270.
- (61) Lord, J. M., Roberts, L. M., Thorpe, P. E. and Vitetta, E. S. (1985). Immunotoxins. *Trends Biotechnology* **3**, 175-179.
- (62) Lord, J. M. and Harley, S. M. (1985). *Ricinus communis* agglutinin B chain contains a fucosylated oligosaccharide side chain not present on ricin B chain. *FEBS Lett* **189**, 72-76.
- (63) Harley, S. M. and Lord, J. M. (1985). *In vitro* endoproteolytic cleavage of castor bean lectin precursors. *Plant Sci.* **41**, 111-116.
- (64) Lord, J. M. (1985). Tansley Review No. 3. The structure and synthesis of plant lectins. *New Phytol.* **101**, 351-366.
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- (66) O'Hare, M., Roberts, L. M., Thorpe, P. E., Watson, G. J., Prior, B., and Lord, J. M. (1987). Expression of ricin A chain in *Escherichia coli*. *FEBS Lett.* **216**, 73-78.
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- (73) Hussain, K., Bowler, C., Roberts, L. M. and Lord, J. M. (1989). Expression of ricin B chain in *Escherichia coli*. *FEBS Lett.* **244**, 383-387.
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- (76) Halpin, C., Musgrove, J. E., Lord, J. M. and Robinson, C. (1989). Import and processing of proteins by castor bean leucoplasts. *FEBS Lett.* **258**, 32-34.
- (77) Spooner, R. A. and Lord, J. M. (1990). Immunotoxins: status and prospects. *Trends in Biotech.* **8**, 189-194.
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- (79) Irwin, S. D. and Lord, J.M. (1990). Nucleotide sequence of a *Ricinus communis* 2S albumin precursor gene. *Nucl. Acids Res.* **18**, 5890.
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